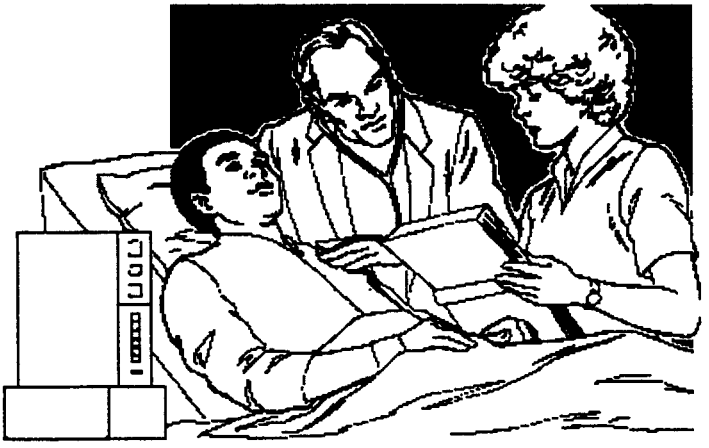
THE GROWING MENACE OF BACTERIAL INFECTIONS



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January 1999

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TABLE OF CONTENTS

INTRODUCTION

In April 1998, news reports announced the first death in the United States as a result of a staph infection that proved resistant to the most powerful known antibiotic, vancomycin. That tragedy occurred in Westchester County. This was not a totally unexpected event, but rather the result of dramatically increasing resistance by the Staphylococcus aureus (staph aureus) bacterium to the various antibiotics used to combat it.

How does one acquire a staph aureus infection? The answer is troubling. In 1995, an estimated 58% of such infections in New York City were acquired by people while in hospitals or long-term-care institutions, according to Dr. Robert J. Rubin, President of the Lewin Group, a health-care public policy and management consulting firm. Such infections alone were indicated by Dr. Rubin to account for 1020 deaths and over $230 million in costs. More effective institutional infection control programs could decrease both mortality and costs.

The problem of increasing bacterial resistance is a national and, indeed, an international one. Resistance is not limited to staph aureus. One expert, Dr. Stuart B. Levy, Director of the Center for Adaptation Genetics and Drug Resistance at the Tufts University School of Medicine, declared in 1997 that there are now four or five organisms in this country that cause untreatable diseases.

Although antibiotic-resistant infections are the most troubling, all infections acquired in health-care settings are cause for concern. It was indicated in 1998 by Dr. William R. Jarvis of the National Center for Infectious Diseases that the rate at which patients pick up infections in hospitals rose by 36% per 1000 patient days between 1975 and 1995. He noted that the monetary costs of such infections have been estimated at $4.5 billion.

Because of the importance of the existing problems and because, as one expert has indicated, there is a very small window of time before matters become significantly worse, the New York State Senate Investigations Committee examined two related subjects: 1) the increase in the contraction of infections in hospitals, medical offices and other health-care settings and 2) the spread of antibiotic-resistant bacterial infections, both in the community and in health-care settings.

The purpose of our investigation was to explore the responses to these problems. Among the issues addressed were: 1) the specification and enforcement of hygienic, isolation and other practices to prevent the spread of infections in health-care settings and in the community, 2) the reporting of resistant bacterial infections and infections acquired in health-care settings, 3) the availability of laboratory facilities to analyze and identify new strains of resistant bacteria, 4) the education

of doctors to avoid overuse of antibiotics and the education of the public to avoid pressuring doctors to prescribe them when they are not warranted, and 5) the development of new antibacterial drugs and vaccines.

An impressive array of witnesses testified at a hearing on these issues on May 28, 1998. The witnesses included a Nobel Laureate, other distinguished microbiologists, representatives of federal, state and local public health agencies, and practicing physicians. (See appendix for witness list.)

FINDINGS

1. The rate at which infections are contracted in health-care settings in the United States has been climbing. Approximately 1.7 million infections were acquired by patients while in American hospitals in 1995 and approximately 88,000 deaths were attributed to such infections.

2. Thousands of persons were estimated to have acquired bacterial infections in health-care facilities in the New York City metropolitan area in 1995 and some died as a result. The costs attributable to those infections ran in the hundreds of millions of dollars.

3. Infections are often spread within hospitals because of the inconsistent application of basic infection control techniques by hospital personnel. For example, studies have concluded that caregivers neglect to wash their hands before or after the majority of contacts with their patients and do not always use gloves properly when indicated.

4. Cost containment efforts have resulted in the reduction of nursing and infection control staffs. Nursing staff reductions have been shown to be associated with increased risk of hospital-acquired infections.

5. Hospitals do not consistently follow professional guidelines recommending that certain hospital patients with bacterial infections be placed in isolation rooms and subject to special precautions to prevent the spread of infection.

6. A substantial portion of hospital-acquired infections should be preventable with stricter attention to hygienic precautions, closer surveillance and monitoring, and earlier introduction of control measures when an emerging problem is recognized.

7. The fact that bacteria become resistant to the antibiotics that are used to kill them has been recognized for over 50 years and is inevitable.

8. Generally, the more that antibiotics are used, the more bacteria will develop resistance to those antibiotics. More antibiotics are being used to treat patients than are needed. Antibiotics are not only used to treat disease in humans, but also used on plants and animals to promote growth, as well as to treat disease.

9. Patients contribute to the development of drug resistance by not taking antibiotics as directed, especially by discontinuing use of a drug before the completion of the prescribed dosage.

10. For at least a decade, the number of bacterial infections that are resistant, not simply to one, but to almost all, antibiotics has been rising dramatically. Indeed, an increasing number of bacterial infections are resistant to all antibiotics except vancomycin and, more recently, even vancomycin has sometimes proven ineffective. In 1992, some 13,300 hospital patients died in the United States as a result of resistant infections.

11. While multi-drug-resistant bacterial infections are found throughout the state, the country and the world, New York City has a particularly high incidence of such infections and is one of the places in this country where such infections first appear.

12. A significant number of staph aureus infections in patients in New York City metropolitan area hospitals and long-term-care facilities are resistant to most antibiotics. The mortality rate for such resistant infections is over 2.5 times that for infections that remain susceptible to various antibiotics. Because of the way in which resistance is developing in New York City, there is only a very small window of time within which to prevent matters from getting significantly worse.

13. In past decades, as bacteria became resistant to one antibiotic, ample alternative antibiotics were generally available. However, until a few years ago, there had been a long downturn in pharmaceutical company investment in antibiotic development. The development of a new generation of antibiotics is challenging and expensive and it will be some years before such a new generation can be given government approval.

14. To the extent that infections resistant to all available antibiotics continue to develop, there could be a return to the pre-antibiotic era, which would greatly reduce the safety of current invasive surgical procedures.

15. Addressing antibiotic resistance requires comprehensive surveillance of resistant infections, including identifying and reporting such infections. However, New York State regulations do not currently require the reporting of all multi-drug-resistant strains of bacterial infections, such as those involving staph aureus and enteroccocus. In addition, more laboratory work is needed to properly identify subspecies of resistant bacteria.

16. Despite recognition by experts of the problems of infections acquired in health-care settings and of antibiotic-resistant infections generally, the growing menace of these

problems indicates that our society's response has been inadequate.

RECOMMENDATIONS

1. With a new sense of urgency, our society must address the rise in infections acquired in health-care settings and antibiotic-resistant infections.

2. Efforts to stem this tide of infections should not be confined to infectious disease and infection control personnel, but should include the leaders of public health agencies, hospitals and other health-care facilities, medical and nursing schools, and the health professions.

3. Health-care leaders must deliver an imperative loud and clear wake-up call to the health-care community about the rising threat of infection and the steps needed to combat it.

4. These health-care leaders must find a way to devote the necessary resources and energy to the task, despite the pressures of managed care and other financial concerns. They should keep in mind the financial benefits that effective infection control can bring to hospitals.

5. The State Department of Health (State DOH) and the New York City Department of Health (City DOH) should specifically add infections involving multi-drug-resistant strains of bacteria such as staph aureus and enteroccocus to the list of diseases

that must be reported under State regulations. Doctors, hospitals and laboratories must be required, not only to report to the State DOH every case of a multi-drug resistant bacterial infection, but also to share strategies to monitor and prevent the spread of such infections. The State DOH and the City DOH should improve the reporting requirements for hospital-acquired infections, whether or not resistant to antibiotics.

6. State health authorities should strengthen, not weaken, regulations governing hospital infection control standards. The State Hospital Review and Planning Council should reinstate the recently eliminated provision requiring annual review of a hospital's infection control program by the chief executive officer, medical director, and director of nursing services.

7. State health authorities should promulgate more specific regulations for hospitals and other health care institutions regarding the monitoring and prevention of the spread of all bacterial infections and in particular antibiotic-resistant infections involving, for example, staph aureus. Such regulations should specify the necessary facilities, personnel and practices, so as to enable the State DOH to better achieve its stated goal of holding health care providers accountable for the care that they provide.

8. In particular, such regulations should require improved hygienic measures in health care facilities to prevent the spread of infections and should include simple measures such as hand washing, as well as engineering or technological components where possible.

9. State health authorities should require greater use of isolation rooms in hospitals and other health-care facilities for persons with communicable, especially multi-drug-resistant, infections.

10. The State DOH should issue more specific standards for professional conduct for doctors and certain other medical personnel under a 1992 statute that required the Department to promulgate regulations describing scientifically accepted barrier precautions and infection control standards. The State Education Department should also issue more specific infection prevention standards for health professionals under its jurisdiction. Both Departments should update and improve their course work and training regulations. All of the above regulations should particularly address situations involving multi-drug-resistant bacterial infections and should provide the level of specific direction contained in some of the guidelines issued by national professional associations.

11. State health authorities should consider developing monitoring systems to obtain a better understanding of the antibiotic prescribing practices of physicians and should provide more guidance to physicians to prevent over-prescribing of antibiotics.

12. The State DOH, along with the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO), should emphasize the monitoring and prevention of the spread of infections, especially antibiotic-resistant infections, in the scheduling and implementation of inspections of hospitals and other health-care facilities and should act aggressively with respect to any deficiencies that are found.

13. State and local health authorities should take measures to ensure that vaccines to prevent bacterial infections are used when available.

14. Efforts should be made at the federal and state level to help develop better research and laboratory capability to address the increase in antibiotic-resistant infections.

15. Studies should be initiated at the federal and state level to identify ways of reducing the use of antibiotics on plants and animals, so as to slow the spread of resistance.

16. Pharmaceutical companies and federal authorities should work together to hasten the development of safe new drugs and vaccines to address resistant bacteria.

17. A joint private-industry/government public service advertising campaign should be initiated to educate the public about antibiotic resistance, the proper use of antibiotics and vaccines, and the importance of good hygiene in preventing the spread of infections in the community and in health-care settings.

18. All persons who work in health-care settings, including doctors, nurses, assistants, aides, and members of housekeeping and other service staffs, must consistently use sound personal and environmental hygienic techniques, such as hand washing, gloving, sterilizing and cleaning, to prevent the spread of infection.

19. Health-care leaders should recognize the important role that the nursing and nonprofessional staff plays in maintaining sound hygiene in health care settings.

20. Hospitals and other health-care facilities should make greater use of isolation rooms and procedures for patients with communicable, especially multi-drug-resistant, infections.

21. Doctors should prescribe antibiotics only when appropriate and prescribe only those antibiotics appropriate to the condition.

22. Doctors should take the time necessary to educate patients and their families about the proper use of antibiotics and the hazards of antibiotic-resistant infections.

23. Hospitals and other health-care facilities should educate patients, families and visitors about hygienic precautions to prevent the spread of infections.

CONCLUSION

The twin menaces of antibiotic-resistant infections and infections acquired in health-care settings present us with a series of paradoxes. Antibiotics have saved countless lives; yet their very use has facilitated the development of resistance. Infectious disease professionals have known about the problem of resistance for years; yet the health-care system has failed to mobilize its resources to solve the problem.

Health-care workers seek to heal us and, first and foremost, must do no harm; yet their failure to consistently follow even the simplest hygienic practices is a major reason for the contraction of bacterial infections in hospitals. Good long-term financial incentives exist for hospitals to insist on strict infection control procedures; yet short-term financial considerations have militated against the consistent use of such procedures.

The State DOH is best situated to see the implications of these infection menaces for the state as a whole and is charged with protecting the public; yet it has been diffident in its approach and too willing to continue to rely on the private sector to voluntarily take the necessary strong measures in the future that the private sector is failing to take in the present.

In order for these paradoxes to be resolved, the public will have to first become keenly aware of the nature and extent of these infection problems and then demand action. Our investigation has sought to subject these problems to public scrutiny, in the belief that sunshine might eventually help to kill even resistant bacteria.

WITNESSES AT PUBLIC HEARING

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